

REMARKS

Reconsideration of the application is respectfully requested. Claim 29 has been allowed and remains pending. Claim 58 was objected to but was indicated as allowable if rewritten incorporating the limitations of a rejected base claim. This has been done in the instant amendment. New claims 60 and 61 have been added which, we respectfully submit, clearly patentably distinguish over the prior art as explained below.

The remaining claims stand rejected under 35 USC 102 (B) and 35 USC 103. These claims have been amended and we submit that, for at least the reasons set forth below, are in condition for allowance.

Claim Rejections Under 35 USC § 102

In response to items 2 to 13 of the Office Action, it is submitted that pending claims 30 to 58 are not anticipated by Moi *et al* (US 5,938,906) or WO 97/04307. Moi *et al* is directed to a *horizontal* gel electrophoresis casting cassette. The title, specification and claims as well as the drawings of Moi *et al* clearly indicate that the disclosed invention is limited to horizontal gel electrophoresis cassettes. The procedures and apparatus used in horizontal gel electrophoresis differ from those used in vertical gel electrophoresis. In fact, horizontal gel electrophoresis cassettes are inadequate, and cannot be used in relation to vertical gel electrophoresis. On this basis, we submit that the subject claimed invention is clearly distinguishable from the disclosure of Moi *et al*.

The condition addressed by the subject invention (ensuring that the two vertical planar wall members lie in parallel planes separated by a predetermined distance when locked) is not present in horizontal gel electrophoresis. Thus, a person skilled in the art would not consider teachings directed to horizontal gel electrophoresis to be relevant to vertical gel electrophoresis situations.

In order to clarify this distinction, pending claim 30 has been amended to specify that the present invention is directed to "*A cassette for holding a vertical electrophoretic gel for use in vertical gel electrophoresis*", and further that the wall members have been limited to being "*first and second substantially planar vertical wall members*". It is submitted that the proposed amendment to the claims clearly distinguishes the present invention from the disclosure of Moi *et al.*

In addition, the cassette disclosed in Moi *et al* does not include locking means "*wherein said corresponding male members and receiving members are adapted not to effect locked engagement of the first and second wall members unless opposed inner faces of said wall members lie in parallel planes separated by a predetermined distance, wherein the male members and the receiving members are adapted to effect engagement by a snap-fit*". The text at column 4, lines 14-18 and exemplified in Figs 1 and 3 of Moi *et al*, describes a "friction fit" type of "locking means" which is inadequate and cannot be used in relation to vertical gel electrophoresis. The text of the present specification at page 3, lines 8-28 clearly indicates that friction fit "locking means" are inadequate due to the fact that the connection may not be entirely even along the lengths of the spacers and small gaps may exist at points between the corresponding ridges and recesses (see for example the indentation 272 in Fig 3 of Moi *et al*). The gaps can cause slight variations in the distance between the parallel sheets and can also cause leakage of the gel to occur. As such, the engagement of the protrusion 172 with the indentation 272 in Moi *et al*, prevents the substantial horizontal or vertical movement of the lid 200 with the tray 100. However, the "locking means" of Moi *et al* does not form a seal inhibiting leakage of the gel as does the "locking means" of the present invention (page 12, line 29 through page 13, line 3). As such, although the "locking means" of Moi *et al* prevents substantial sliding or lifting between the floor and the top, it does not provide the same degree of locking

engagement, which is prevented unless the wall members lie in parallel planes separated by a predetermined distance, or is sufficient to form a seal along each side of the cassette and therefore inhibit leakage of the gel forming liquid or electrical current.

Accordingly, the vertical electrophoretic cassette of the present invention is novel over Moi et al.

WO 97/04307 is directed to a cassette for electrophoretic gels, wherein the opposing walls of the cassette are held in place by projections which are clipped or welded to the opposite wall. The "locking means" referred to by the Examiner, maintain a consistent space between the two side walls of the cassette (page 6, lines 13-25). As is apparent from the drawings (especially Figures 1, 4 and 5), these projections inter-engage in a friction-fit manner. This friction-fit does not constitute a "snap-fitting locking means" of the type set out in the present invention to ensure that the two vertical planar wall members lie in parallel planes separated by a predetermined distance when locked. Claim 30 of the subject application refers to a "locking means . . . adapted not to effect locked engagement of the first and second wall members unless opposed inner faces of said wall members lie in parallel planes separated by a predetermined distance, wherein the male members and the receiving members are adapted to effect engagement by a snap-fit".

The projections and receiving members, 16 and 17 of WO 97/04307 perform the function of securing the two plates and this is effected by a friction fit. For example, portions of the protruding male member may only be partially (a half or three-quarters) inserted into the receiving member but would still be held in place by the friction-fit. A problem with this is that the distance between the two plates would not be uniform at all points.

The present invention is fundamentally different. The snap-fitting locking means of the present invention prevents locked engagement of the wall members unless they lie in parallel planes separated by the pre-determined distance. Until the respective wall members are so

orientated, snap-fitting locked engagement cannot occur. This is fundamentally different from the disclosure in WO 97/04307 where the wall members may be held in place even though portions of them may not be separated by the intended pre-determined distance and the 'locking means' does not constitute a "snap-fitting locking means" .

Accordingly, the vertical electrophoretic cassette of the present invention comprising snap-fitting locking means is novel over WO 97/04307.

In light of the above, it is submitted that neither of the two citations anticipates the invention of the present application. Importantly, the "snap-fitting locking means" of the present invention has a specific purpose, namely "to prevent locked engagement of the first and second wall members" unless they are in their desired orientation. The prior art cited by the Examiner contains engagement means (eg corresponding ridges/projections, keys and the like) which hold the wall members (or plates) together by means of a friction-fit. Such a friction-fit cannot fairly be called "snap-fitting locking means" (of the type specified in the present invention) as it fails to ensure that all parts of the respective wall members are uniformly separated by the desired (pre-determined) distance.

In light of the above, the claimed invention of the present application is novel over the cited prior art.

Claim Rejections Under 35 U.S.C. § 103

The amended claims are not obvious over *Moi et al* and/or WO 97/04307 either alone or in view of Perez (US 6,432,262 B1) or Leffler (US 5,569,369). Applicants traverse this rejection and submit that the newly presented claims are not obvious in view of this disparate collection of references.

There is no motive for a person skilled in the art requiring a cassette for holding a vertical electrophoretic gel for vertical gel electrophoresis having snap-fitting locking means adapted to

prevent the locking engagement of the first and second wall members unless they are in their desired orientation to combine the teaching of Moi *et al.*, WO 97/04307, Perez or Leffler. Moi *et al* teaches a casting cassette for horizontal gel electrophoresis. WO 97/04307 teaches a cassette for use in the formation of an electrophoretic gel, wherein the opposing walls of the cassette are held in place by projections which are clipped or welded to the opposite wall. It is submitted that WO 97/04307 does not teach or suggest a vertical cassette comprising "locking means . . . adapted not to effect locked engagement of the first and second wall members unless opposed inner faces of said wall members lie in parallel planes separated by a predetermined distance, wherein the male members and the receiving members are adapted to effect engagement by a snap-fit". Accordingly, a person skilled in the art would not be motivated by the teachings of WO 97/04307, either alone or in combination with Moi *et al.*, to produce the present invention.

Neither Perez or Leffler compensate for the inadequacies of the two primary references, such inadequacies having been set forth above. Perez teaches a pair of clamps designed to secure a cassette or parallel plate gel enclosure in general to a frame in a manner that will form the cassette and frame into buffer chambers as part of an electrophoresis cell (Column 1, lines 46-55). Perez does not teach or suggest a vertical cassette comprising "*locking means...adapted not to effect locked engagement of the first and second wall members unless opposed inner faces of said wall members lie in parallel planes separated by a predetermined distance, wherein the male members and the receiving members are adapted to effect engagement by a snap-fit*" according to the present invention.

Accordingly, there would be no reason for one skilled in the art to consider the teaching of Moi *et al* and WO 97/04307 in order to position a removable buffer chamber according to Perez.

Leffler teaches a cassette for gel electrophoresis which may be easily disassembled without disrupting or damaging the gel and which prevents the gel from sliding out of the cassette (Column 2, lines 60-63). Leffler does not teach or suggest a vertical cassette comprising "*locking means...adapted not to effect locked engagement of the first and second wall members unless opposed inner faces of said wall members lie in parallel planes separated by a predetermined distance, wherein the male members and the receiving members are adapted to effect engagement by a snap-fit*" according to the present invention.

In Leffler, the respective wall members are held together by means of a friction-fit arrangement. Each wall member has projecting keys, being items 36 and 76 in the drawings (see for example Figs 12 and 13). As stated in column 5 of Leffler, the "keys 36 [of one plate] . . . fit within the space between the keys 76 [of the other plate] . . . interconnecting the posterior plate and the anterior plate and fastening the posterior plate to the anterior plate". The specification of Leffler goes on to state that "the keys 36 . . . are in contact with the keys 76 . . . This contact between the keys 36, keys 76 and the back surface of the anterior plate help to maintain a fixed relative positioning of the plates". It is apparent from these excerpts that, although the keys interdigitate so as to hold the respective plates together, there is no "snap-fitting locking means" such as that of the present invention.

The "locking means" of the subject application forms a specific function, namely "to prevent locked engagement of the first and second wall members unless opposed interfaces of said wall members lie in substantially parallel planes separated by a pre-determined distance".

The keys 36, 76 of the cited specification are not adapted to prevent locked engagement unless the respective wall members are in their optimum orientation. On the contrary, these keys are adapted only to interdigitate and hold the plates together by means of a friction-fit. There is no "snap-fitting locking means" to ensure that when the respective wall members (or plates) are

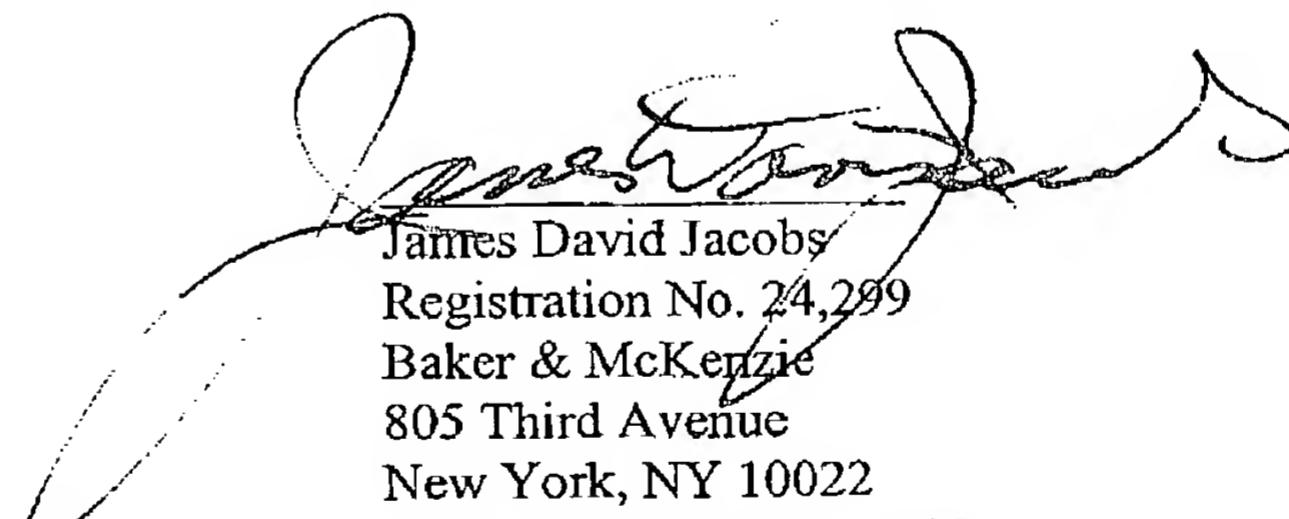
held together they are in their optimum position. This is an important feature of the invention of the subject application.

Accordingly, there would be no reason for one skilled in the art to consider the teaching of Moi *et al* and WO 97/04307 in order to provide a vertical cassette with friction-fit locking means according to Leffler.

This communication is believed to be fully responsive to the Office Action and every effort has been made to place the application in condition for allowance. It is submitted that no new issues are being presented by this amendment. In view of the foregoing explanation, a favorable Office Action is hereby earnestly solicited.

If a telephone interview would be of assistance in advancing prosecution of the subject application, Examiner is requested to telephone the number provided below. While no fee is believed due, if any fee is due, the Commissioner for Patents is hereby authorized to charge our Deposit Account number 02-0393.

Respectfully submitted,



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